



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Technical Data Sheet

Evaluation to IPC Standards

Solder Paste SN100CV P608 D4

29th May 2018
Nihon Superior Co., Ltd.R&D Center



NIHON SUPERIOR

(1 / 12)

**NIHON SUPERIOR**

NIHON SUPERIOR CO., LTD. NS Bldg.,1-16-15 Esaka-Cho,Suita City,Osaka,Japan 564-0063
 Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

1. Test Materials

Solder paste	SN100CV P608 D4
Flux	P608
Classification to J-STD-004	ROL0

2. Properties of Solder Paste

Powder Testing		
Property		Result
Alloy Composition		Sn-1.5Bi-0.7Cu-Ni+Ge
Melting point	Liquidus temperature	225°C
	Solidus temperature	221°C
Powder shape		Sphere
Powder size		20 – 38μm / Type 4
Solder Paste Testing		
Property		Test Method
Metal content		IPC J-STD-005A TM-650 2.2.20
Viscosity		IPC J-STD-005A TM-650 2.4.34.3 Malcom Spiral Viscometer
Cold Slump		IPC J-STD-005A TM-650 2.4.35 / Paragraph 5.2.1
Hot Slump		IPC J-STD-005A TM-650 2.4.35 / Paragraph 5.2.2
Solder ball		IPC J-STD-005A TM-650 2.4.43
Wetting		IPC J-STD-005A TM-650 2.4.45
Expiry Date		0-10°C in refrigerator

**NIHON SUPERIOR**

(2 / 12)

**NIHON SUPERIOR**

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Flux Medium Testing		
Test		Result
Quantitative Halides		0.00 %
Copper mirror		No Breakthrough
Fluoride spot		Pass
Surface Insulation Resistance	After 96 hours	$1.6 \times 10^{10} \Omega$
	After 168 hours	$1.6 \times 10^{10} \Omega$
Electrochemical migration		$3.6 \times 10^{10} \Omega$ Pass
Corrosion		No corrosion

※ The information contained herein is based on in-house test results considered accurate and is offered at no charge. No warranty is expressed regarding the accuracy of this data.

**NIHON SUPERIOR**

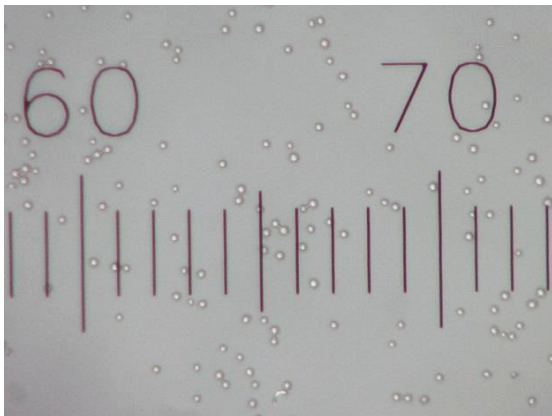
(3 / 12)



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

3. Properties of Solder Paste

Item	Powder Shape
Result	 Spherical

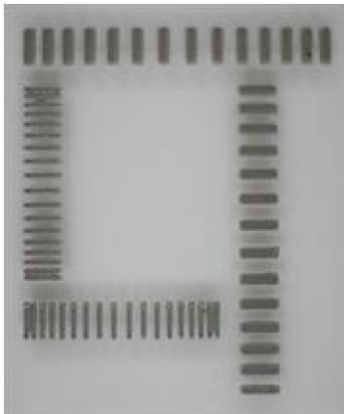
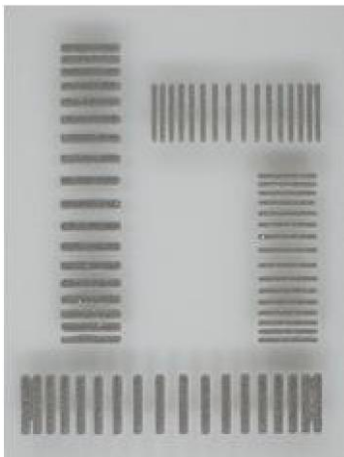


NIHON SUPERIOR

(4 / 12)

**NIHON SUPERIOR**

NIHON SUPERIOR CO., LTD. NS Bldg.,1-16-15 Esaka-Cho,Suita City,Osaka,Japan 564-0063
 Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test	Cold Slump (IPC J-STD-005A TM-650 2.4.35/ Paragraph 5.2.1)																																																																							
Result	Test Conditions Ambient Temperature: 25°C Ambient Humidity:40~50%RH		Stencil IPC-A-21 (0.20 mm Thick)																																																																					
				<table><thead><tr><th colspan="3">0.63×2.03mm</th><th colspan="3">0.33×2.03mm</th></tr><tr><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th></tr></thead><tbody><tr><td>0.79</td><td></td><td></td><td>0.45</td><td></td><td></td></tr><tr><td>0.71</td><td></td><td></td><td>0.40</td><td></td><td></td></tr><tr><td>0.63</td><td></td><td></td><td>0.35</td><td></td><td></td></tr><tr><td>0.56</td><td></td><td></td><td>0.30</td><td></td><td></td></tr><tr><td>0.48</td><td></td><td></td><td>0.25</td><td></td><td></td></tr><tr><td>0.41</td><td></td><td></td><td>0.20</td><td></td><td></td></tr><tr><td>0.33</td><td>○</td><td>○</td><td>0.15</td><td>○</td><td>○</td></tr><tr><td></td><td></td><td></td><td>0.10</td><td>×</td><td>×</td></tr><tr><td></td><td></td><td></td><td>0.06</td><td>×</td><td>×</td></tr></tbody></table>			0.63×2.03mm			0.33×2.03mm			Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.	0.79			0.45			0.71			0.40			0.63			0.35			0.56			0.30			0.48			0.25			0.41			0.20			0.33	○	○	0.15	○	○				0.10	×	×				0.06	×	×
0.63×2.03mm			0.33×2.03mm																																																																					
Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.																																																																			
0.79			0.45																																																																					
0.71			0.40																																																																					
0.63			0.35																																																																					
0.56			0.30																																																																					
0.48			0.25																																																																					
0.41			0.20																																																																					
0.33	○	○	0.15	○	○																																																																			
			0.10	×	×																																																																			
			0.06	×	×																																																																			
	Stencil IPC-A-21 0.20 mm Thick Pass		Stencil IPC-A-20 (0.10 mm Thick)																																																																					
				<table><thead><tr><th colspan="3">0.33×2.03mm</th><th colspan="3">0.20×2.03mm</th></tr><tr><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th></tr></thead><tbody><tr><td>0.45</td><td></td><td></td><td>0.30</td><td></td><td></td></tr><tr><td>0.40</td><td></td><td></td><td>0.25</td><td></td><td></td></tr><tr><td>0.35</td><td></td><td></td><td>0.20</td><td></td><td></td></tr><tr><td>0.30</td><td></td><td></td><td>0.175</td><td></td><td></td></tr><tr><td>0.25</td><td></td><td></td><td>0.15</td><td></td><td></td></tr><tr><td>0.20</td><td></td><td></td><td>0.125</td><td></td><td></td></tr><tr><td>0.15</td><td></td><td></td><td>0.10</td><td></td><td></td></tr><tr><td>0.10</td><td>○</td><td></td><td>0.075</td><td>○</td><td>○</td></tr><tr><td>0.06</td><td>×</td><td>○</td><td></td><td></td><td></td></tr></tbody></table>			0.33×2.03mm			0.20×2.03mm			Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.	0.45			0.30			0.40			0.25			0.35			0.20			0.30			0.175			0.25			0.15			0.20			0.125			0.15			0.10			0.10	○		0.075	○	○	0.06	×	○			
0.33×2.03mm			0.20×2.03mm																																																																					
Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.																																																																			
0.45			0.30																																																																					
0.40			0.25																																																																					
0.35			0.20																																																																					
0.30			0.175																																																																					
0.25			0.15																																																																					
0.20			0.125																																																																					
0.15			0.10																																																																					
0.10	○		0.075	○	○																																																																			
0.06	×	○																																																																						
	Stencil IPC-A-20 0.10 mm Thick Pass																																																																							

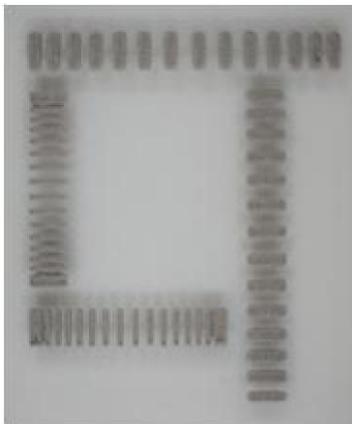
**NIHON SUPERIOR**

(5 / 12)



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test	Hot Slump (IPC J-STD-005A TM-650 2.4.35/ Paragraph 5.2.2)																																																																													
Result	Test Conditions Ambient Temperature: 25°C Ambient Humidity: 40~50%RH Test Temperature: 150°C Test Time: 10minutes		<table><tr><th colspan="6">Stencil IPC-A-21 (0.20 mm Thick)</th></tr><tr><th colspan="3">0.63×2.03mm</th><th colspan="3">0.33×2.03mm</th></tr><tr><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th></tr><tr><td>0.79</td><td></td><td></td><td>0.45</td><td></td><td></td></tr><tr><td>0.71</td><td></td><td></td><td>0.40</td><td></td><td></td></tr><tr><td>0.63</td><td></td><td></td><td>0.35</td><td></td><td></td></tr><tr><td>0.56</td><td></td><td></td><td>0.30</td><td></td><td></td></tr><tr><td>0.48</td><td></td><td></td><td>0.25</td><td></td><td></td></tr><tr><td>0.41</td><td></td><td></td><td>0.20</td><td></td><td></td></tr><tr><td>0.33</td><td>○</td><td>○</td><td>0.15</td><td>○</td><td>○</td></tr><tr><td></td><td></td><td></td><td>0.10</td><td>×</td><td>×</td></tr><tr><td></td><td></td><td></td><td>0.06</td><td>×</td><td>×</td></tr></table>				Stencil IPC-A-21 (0.20 mm Thick)						0.63×2.03mm			0.33×2.03mm			Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.	0.79			0.45			0.71			0.40			0.63			0.35			0.56			0.30			0.48			0.25			0.41			0.20			0.33	○	○	0.15	○	○				0.10	×	×				0.06	×	×
	Stencil IPC-A-21 (0.20 mm Thick)																																																																													
	0.63×2.03mm			0.33×2.03mm																																																																										
	Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.																																																																								
	0.79			0.45																																																																										
	0.71			0.40																																																																										
	0.63			0.35																																																																										
	0.56			0.30																																																																										
	0.48			0.25																																																																										
	0.41			0.20																																																																										
0.33	○	○	0.15	○	○																																																																									
			0.10	×	×																																																																									
			0.06	×	×																																																																									
																																																																														
Stencil IPC-A-21 0.20 mm Thick Pass																																																																														
		<table><tr><th colspan="6">Stencil IPC-A-20 (0.10 mm Thick)</th></tr><tr><th colspan="3">0.33×2.03mm</th><th colspan="3">0.20×2.03mm</th></tr><tr><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th><th>Spacing /mm</th><th>Hor.</th><th>Vert.</th></tr><tr><td>0.45</td><td></td><td></td><td>0.30</td><td></td><td></td></tr><tr><td>0.40</td><td></td><td></td><td>0.25</td><td></td><td></td></tr><tr><td>0.35</td><td></td><td></td><td>0.20</td><td></td><td></td></tr><tr><td>0.30</td><td></td><td></td><td>0.175</td><td></td><td></td></tr><tr><td>0.25</td><td></td><td></td><td>0.15</td><td></td><td></td></tr><tr><td>0.20</td><td></td><td></td><td>0.125</td><td></td><td></td></tr><tr><td>0.15</td><td></td><td></td><td>0.10</td><td></td><td></td></tr><tr><td>0.10</td><td>○</td><td>○</td><td>0.075</td><td>○</td><td>○</td></tr><tr><td>0.06</td><td>×</td><td>×</td><td></td><td></td><td></td></tr></table>				Stencil IPC-A-20 (0.10 mm Thick)						0.33×2.03mm			0.20×2.03mm			Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.	0.45			0.30			0.40			0.25			0.35			0.20			0.30			0.175			0.25			0.15			0.20			0.125			0.15			0.10			0.10	○	○	0.075	○	○	0.06	×	×				
Stencil IPC-A-20 (0.10 mm Thick)																																																																														
0.33×2.03mm			0.20×2.03mm																																																																											
Spacing /mm	Hor.	Vert.	Spacing /mm	Hor.	Vert.																																																																									
0.45			0.30																																																																											
0.40			0.25																																																																											
0.35			0.20																																																																											
0.30			0.175																																																																											
0.25			0.15																																																																											
0.20			0.125																																																																											
0.15			0.10																																																																											
0.10	○	○	0.075	○	○																																																																									
0.06	×	×																																																																												
Stencil IPC-A-20 0.10 mm Thick Pass																																																																														



NIHON SUPERIOR

(6 / 12)



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test	Solder Ball (IPC J-STD-005A TM-650 2.4.43)	
Result	Test Conditions Ambient Temperature: 25°C Ambient Humidity: 40~50%RH Substrate Temperature 250°C Time: 20sec or less  15 minutes after printing Pass  4 hours after printing Pass	



NIHON SUPERIOR

(7 / 12)



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg.,1-16-15 Esaka-Cho,Suita City,Osaka,Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test	Wetting (IPC J-STD-005A TM-650 2.4.45)
Result	Test Conditions Ambient Temperature: 25°C Ambient Humidity40~50%RH Test Temperature: 250°C Time: 20sec or less 



NIHON SUPERIOR

(8 / 12)



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test	Copper Mirror (IPC J-STD-004B TM-650 2.3.32)
Result	 Control P608 No Breakthrough



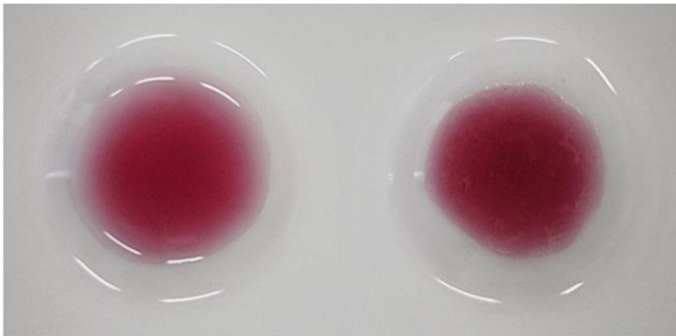
NIHON SUPERIOR

(9 / 12)



NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test	Fluoride Spot (IPC J-STD-004B TM-650 2.3.35.1)
Result	 Control P608 Pass



NIHON SUPERIOR

(10 / 12)



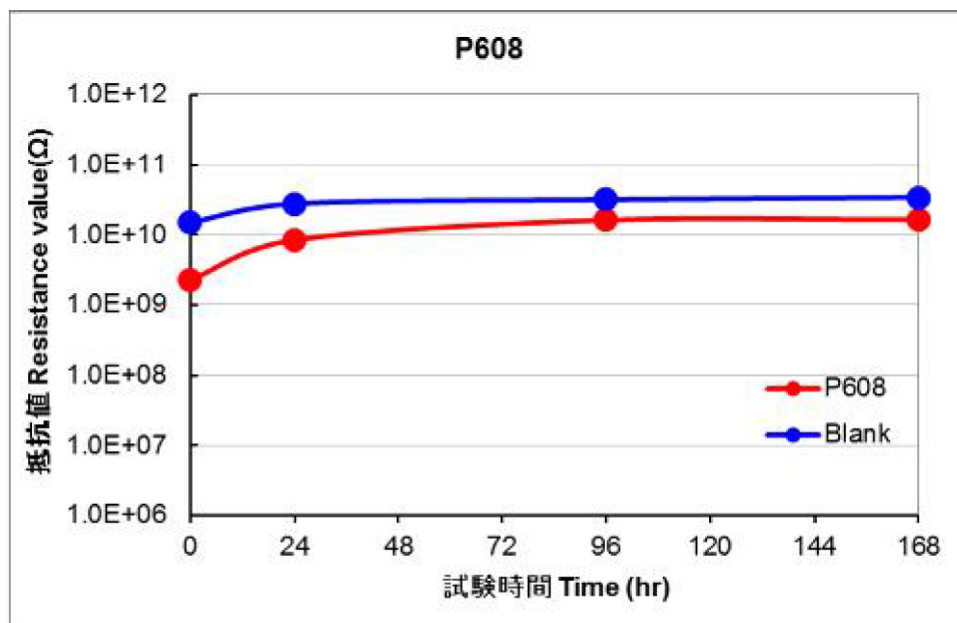
NIHON SUPERIOR

NIHON SUPERIOR CO., LTD. NS Bldg., 1-16-15 Esaka-Cho, Suita City, Osaka, Japan 564-0063
Phone : +81-(0)6-6380-1121 Fax : +81-(0)6-6380-1262 E-mail : info@nihonsuperior.co.jp

Test

Surface Insulation Resistance
(IPC J-STD-004A TM-650 2.6.3.3/ 85°C, 85%RH, 168hrs)

Result



NIHON SUPERIOR

(11 / 12)

**Test****Electrochemical Migration**

(IPC J-STD-004B TM-650 2.6.14.1)

Telcordia GR-78-CORE / 65°C 85%RH, Bias DC10V, 500hrs)

Result

N	Control		P608	
	0hr	500hr	0hr	500hr
1	1.8E+10	1.1E+10	5.1E+09	4.3E+11
2	1.7E+10	1.1E+10	4.4E+09	1.1E+11
3	4.4E+10	1.0E+10	1.4E+10	2.5E+10
4	1.9E+10	1.1E+10	7.2E+09	1.4E+10
5	1.1E+11	1.4E+10	5.4E+09	3.5E+10
6	1.7E+10	1.0E+10	8.3E+09	2.8E+10
7	1.6E+10	1.0E+10	2.7E+09	7.7E+09
8	1.7E+10	1.0E+10	4.4E+09	2.4E+11
9	2.0E+10	1.0E+10	6.4E+09	3.9E+10
10	2.1E+10	1.0E+10	3.2E+09	3.4E+09
Average	2.5E+10	1.1E+10	5.5E+09	3.6E+10

Pass
(Final > Initial/10)

